

THE SINCLAIR/TIMEX USERS MAGAZINE

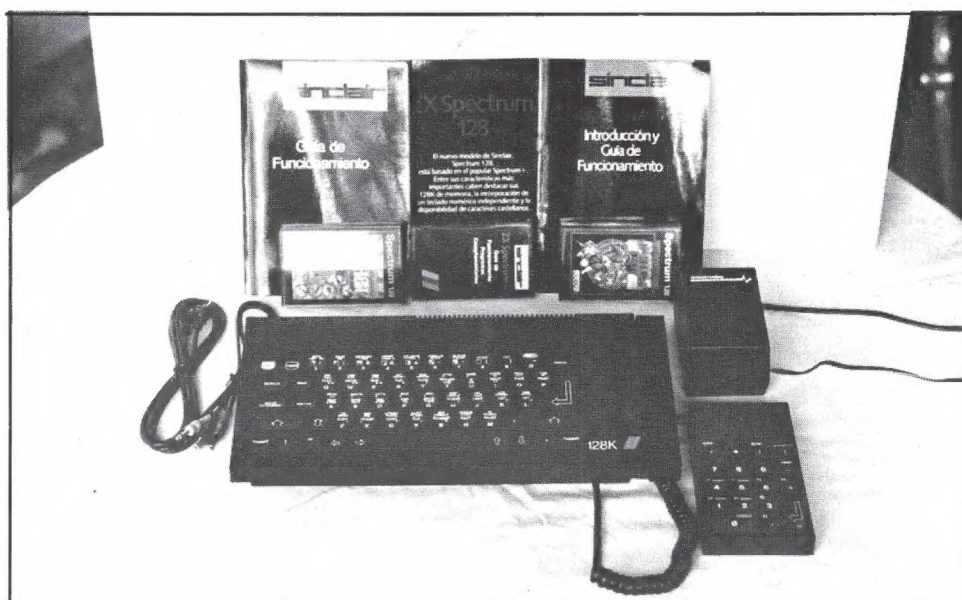
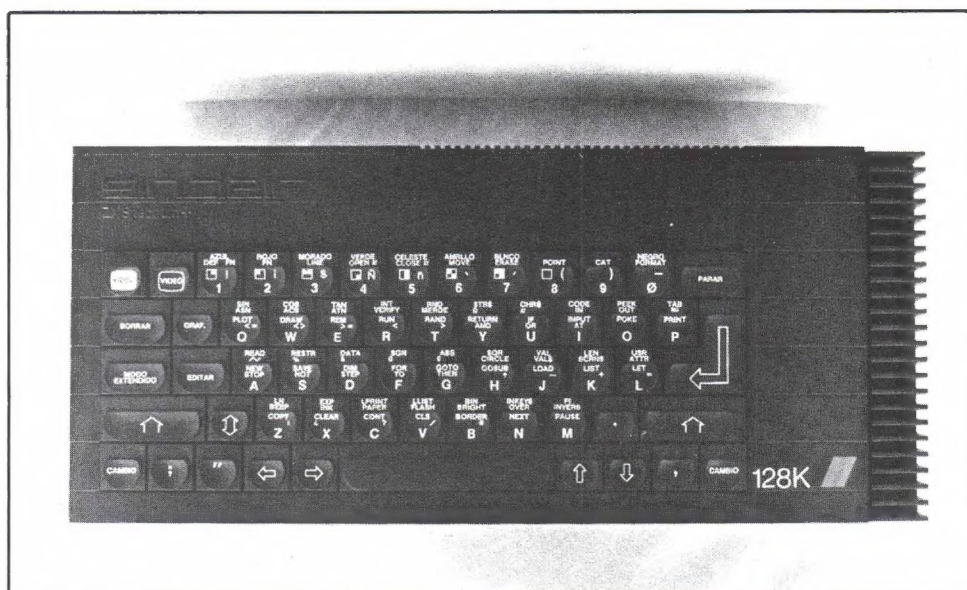
\$300

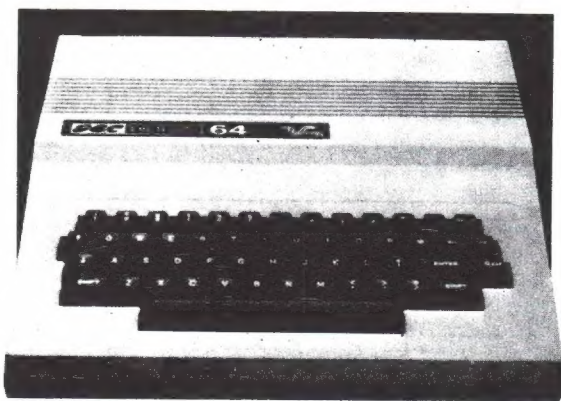
Volume IV

JANUARY 1986

Number 1

ZX Spectrum 128 Review





WORD PROCESSOR

SUM MAGAZINE has a Dragon 64K Computer made in England for sale. It comes with a highly acclaimed and powerful 64 column word processor on a ROM cartridge which is much more powerful than anything available for the Spectrum or TS-2068. (File saving/loading is to cassette.) It has a full-size keyboard; parallel & serial interfaces; TV & monitor output; and joystick ports. It is in near new condition. Other software and peripherals include a data base manager, games and graphics programs, two joysticks, printer cable, 110 volt power supply, cassette cables, and 12 issues of Dragon User Magazine. Software, disk drives, and hardware still available in England. \$225. Richard Cravy, c/o SUM, 3224 NW 30th Avenue, Gainesville, Florida 32605. 904/378-9000.

curry computer

P.O. Box 5607
Glendale, Arizona 85312-5607, U.S.A.
Telephone: 1-602-978-2902
Telex (Via WUI): 6501267701

"We have had a QL for about one week now and are just beginning to appreciate the power and versatility it contains. Keep in mind that for the price . . . There is nothing that compares with it."

The QL Report
published by Curry Computer
February 1, 1985

We know the QL . . . we've been appreciating it longer.

Write for our free catalog.

FOOTE SOFTWARE

TS2068 ROM Software

Badgammon	\$15.00
U.S.A. (Presidents/States & Capitols)	\$12.95
Calorie Counter	\$12.95
Advanced Math (Calculus)	\$12.95

Add \$1.00 on all orders for shipping/handling

FOOTE SOFTWARE

P. O. Box 14655 — Gainesville, FL 32604-4655
904/462-1086 6-9 p.m. EST



THE SINCLAIR/TIMEX USERS MAGAZINE

3224 Northwest 30th Avenue
Gainesville, Florida 32605

904/378-9000 or 462-1086 evenings

EDITOR Joe Williamson
PUBLISHER Richard Cravy
STAFF WRITERS Bill Woodward & John Monkus

SUBSCRIPTION RATES 9/1/85

Regular Subscription (U.S.) \$15.00/year
Canadian Subscription \$18.00/year
All other countries please inquire first
Published monthly

ADVERTISING RATES 9/1/85

Full Page \$75
Half Page \$45
Quarter Page \$25
Eighth Page \$15
These prices do not include artwork or ad layout. There will be an extra charge for custom ad work. Ads should be in our offices by the 10th of month of publication.
Classifieds: \$2.00 per line. FREE personal ads for subscribers (no dealers).

SUBMISSIONS

We are willing to pay for articles published (after editing). Our current rate is 10¢ per text line and 10¢ per program line (after editing). Authors should indicate if they wish to be paid when submitting material.

CORRESPONDENCE

Please provide us with all information on your mailing label in all correspondence. Your subscription expiration is printed on your label with four digits; the first two indicate the year, the last two the month. Please tell our advertisers you saw their ad in SUM.

Spectrum 128 Review

The Spectrum 128 is the latest computer from Sinclair in the Spectrum family. It is housed in a Spectrum + body, but has more pluses than the Spectrum + ever dreamed of having.

The particular version that we received is the Spanish one currently being sold in Spain. Sinclair is holding back the English introduction of this machine until after the first of the year due to a surplus of unsold Spectrum Pluses still available in England and expected to be sold during the holiday season.

At first glimpse, it looks like a Spectrum + with an extension on the right side of the computer which turns out to be a large heat-sink. At second look, we see that the connections have been moved around a bit and some have been added! An RGB interface has been included and has the same connections as on the QL (An 8-pin DIN connector). The EAR & MIC connections have been moved to the left side and an RS232 port has been added. On the right front of the computer is another port to attach the (included) external keypad which includes 0-9, period, /, *, (,), -, +, and ENTER (=) plus many edit functions.

Because these are European computers, we have always had a problem with them running in color on U. S. televisions. With the RGB interface, it works beautifully on any RGB monitor. I have tried it on my Sears RGB and on the Magnavox (NAP) Monitor 40. It also has the long time standard TV channel 36 output in black & white on U. S. television.

The computer boasts having 128K of memory, if you add everything up as they did with the TS 2068 (72K) you come up with a whopping 160K of memory. This is because there are two operating systems in this machine. One operating system is the standard Spectrum, and the other is for the new 128 enhanced system.

When you power up the system, you are in the 128K mode. A new 1985 copyright notice tells you something is different. On this unit, it says Espanol underneath (all prompts and messages are in Spanish). While in the 128K mode, you can go to the Spectrum mode at any time by typing in SPECTRUM at the bottom of the screen, and it will behave exactly like a Spectrum. Otherwise, you have a full-screen editor

on your hands where you type in the full word (letter by letter) for each BASIC command.

The full-screen editor allows you to move the cursor anywhere on the screen and correct or change any of your program. The keypad has additional control where it can move to the end of the program and back, move a word or line at a time and delete a word or line just as easily. There is also a renumbering command which allows you to start and space each line how you want to. For example, NUM 100,5 will renumber the program lines so that they start at line 100 and increment by 5. Also the DELETE command has been added so you can delete a block of lines at a time: DELETE 50,70 will delete lines 50 through 70 inclusive.

All commands must be typed in capital mode and UPPER CASE is spelled out at the bottom of the screen when you are in that mode. If a syntax error is detected, the cursor appears just before the error with a picture of a bug blinking inside. When listing back programs which you have used the colon to separate commands, each command is listed on a separate line for easier editing. And get this: Programs created in the 128K mode can be LOADED in on a Spectrum and vice-versa!

The separate keypad is a very powerful extension of the keyboard. In 128k mode, it will act like a calculator where numbers and math symbols are entered directly and then = is pressed and the answer is displayed.

A text edit mode or word processor is built into the machine. When EDIT E\$ is entered, the screen changes to one similar to Tasword. Line and column position is given as well as the text edit mode you are in. Even word wrap on/off is given. Edit modes include insert, substitution, and automatic margin. The external keyboard comes in handy again as it allows you to move through and delete text as needed and to change commands and set margins. I found the external keypad easier to use than a joystick.

With the RS232 port connected to a serial printer, the text can be printed out. LPRINT, LLIST, and COPY are all supported via the RS232 port connected to an Epson type printer. The baud rate can be changed using the FORMAT command and can be set to 50, 110, 300, 600, 1200,

2400, 4800, and 9600 baud. The RS232 port is connected to channel 3 and can be used to transmit and receive.

The extra memory is accessed as a "RAM disk". All the storage commands are the same as they are for cassette, but use the exclamation mark as the qualifier. Example: SAVE! "name" LINE 10, etc. VERIFY is not supported, however, you can use CAT! to list files stored in RAM disk and ERASE! "name" to erase files. SAVEing and LOADING of these files is instantaneous.

The Spectrum 128 does not have a speaker inside like earlier models. With this model, you use the TV speaker or connect the mic jack to your monitor's audio input jack. Both music and sound effects can be obtained with this model due to the addition of a sound synthesizer just like the one used in the TS 2068.

The Spectrum 128 also has MIDI access (Musical Instrument Digital Interface). This access allows you to plug the computer into different types of musical instruments such as synthesizers which use this type of standard connection. In this way, the computer can be used to program music which the musical instrument will interpret.

The BEEP command is the same as before. To program the sound generator, a much easier approach is taken than that with the 2068. You build up your music or sound effects in chains by using character arrays. Once you build up your chain, you use the PLAY command. PLAY controls up to three sound channels like A, B, & C. to play these back, you would use PLAY A\$, B\$, C\$.

To build a chain, you would simply state LET A\$="cfedafg" and upon entering PLAY A\$, those notes are played. You can change the octave by using the O command and a number from 0 to 8. Now LET A\$="O7cfedafg" and the notes are played in the eighth octave. The # and \$ will raise and lower the tone. The M command programs the noise and tone channels. Duration is controlled by placing a letter before each note. Pauses are specified by &. The V command sets the volume. The W command sets the envelope or shape of the sound waveform. The X command controls the duration. Tempo is controlled by the T command. The H command turns the channels off. The character arrays can be as long as you wish and the nicest thing is that there are no commas between commands as on the 2068.

The MIDI interface is another story in

itself. Most Synthesizers have eight channels you can control and all can be controlled from the Spectrum 128. Being interested in music myself, I went out and looked at some of the smaller keyboard synthesizers and had intended on getting an inexpensive one to experiment with. Unfortunately, the cheapest one I could find that had the MIDI interface was \$650 from Casio. I'll just take their word for it that it works well!

The Spectrum 128 comes with the standard Spectrum manual and its own separate guide just covering the 128 mode of operation. The manuals we got were of course in Spanish, so we had to have them translated, but they seem to be written quite well and covers the new functions thoroughly.

Three pieces of software come with the 128. The USER GUIDE COMPANION, SUPERTTEST, and INTERNATIONAL MATCH DAY. USER GUIDE COMPANION comes with all the Spectrums. INTERNATIONAL MATCH DAY is a soccer game with excellent graphics, and SUPERTTEST tests you at many different events. This last one takes eleven minutes to load which tells you that the extra 64K RAM memory is being used for something!

To ensure a fair start for this new machine, Sinclair has contacted several software houses and offered incentives to ensure that a good supply of software is available when the machine does hit the market in the UK. This is a practice not seen in the past from Sinclair and it means that Sinclair must really be serious about the future and success of it.

All the hardware that we have tried seems to work fine on this machine. The QL printer works in 128K mode. The TS 2040 printer works in 48K mode but not 128K. The QL joystick adapter works in the keypad port for games which use the joystick. The keyboard itself seems to work and feel better than previous models.

Looking inside, the PC board fills every space available. The huge heatsink on the right side should keep any over heating from ever occurring. The familiar Z80 CPU and two ULA chips and sixteen 4164 (64K X 1) RAM chips and a 32K X 8 EPROM are found along with 8 support chips a PAL (Programmable Array Logic) chip and the AY-3-8912A programmable sound chip. The EPROM and the Ferranti chip are both in sockets. The connectors seem to be good and sturdy. The board is marked "version 2".

Overall, I am very impressed with this machine. I would have liked to have seen a 64 column mode included, but otherwise, it seems to me that this would be a better transition to go to from the 2068 or Spectrum then to go to a completely different machine like the QL.

It has much more power than its predecessors and allows use of more

peripherals without having to buy more interfaces to stack on the rear expansion port. I would say its a worthwhile machine to invest in.

One final note: SINCLAIR USER announced that the 128 will be on sale in the UK by the end of January or at least as promised to software houses who are currently writing programs for this new machine.

-- Joe Williamson

2068 Power Supply Make It Cooler & Quieter

I have discovered that programs SAVED to cassette tapes from the TS-2068 can have a very high Noise/Scratch background level making verification and loading a somewhat iffy proposition. The best way to determine if you have this problem is to monitor the signal on the tape aurally during loading. The background noise can be heard before the leader and between the leader and the program. If this condition creates a problem for you, the following will provide a solution.

The TS-2068, when operated from a DC supply voltage of more than 13 volts, creates a superfluous noise on the internal power distribution lines, probably from the action of the switching voltage regulator which supplies the regulated 5 volt supply. Somehow, this noise finds its way to the SPKR/TAPE output of the SCLD chip. For some unknown reason, if the DC supply voltage is reduced to something less than 13 volts this noise disappears. I have found that a supply voltage of about 8 volts gives very good results. There are two drawbacks: At less than 15 volts you get NO COLOR output and the A&J MicroDrive will not work.

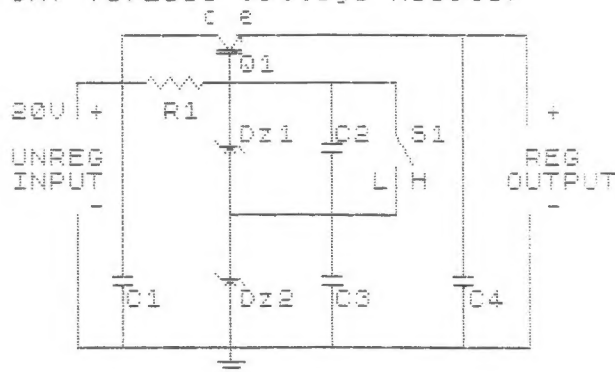
Because I sometimes wish to use the MicroDrive and the Cassette tape storage interchangeably, as in taking programs from the MicroDrive and giving them long term storage on the cheaper cassettes, I developed a voltage reducer to put in the cord of the TS-2068 power unit so that I can change the supply voltage from the normally used 15 volts to a lower 8 volts when I want to save a program to cassette tape. The supply voltage can be changed from 15 volts to 8 volts and back to 15 volts without affecting any of the program or data stored in the TS-2068 memory.

Also, by operating the TS-2068 at a normal 15-16 volt level rather than the power unit's output of about 21 volts, the heat dissipation in the TS-2068 is reduced considerably.

The schematic of the voltage reducer is self-explanatory. Two words of caution, however. Although the regulating transistor, 2N3055 or similar, is capable of passing many amps of current, it must be well heat-sinked as it dissipates about 5 Watts when delivering the low voltage output. When cutting the cord of the power unit, verify the polarity of the leads when they are reconnected remembering that the outer contact of the concentric connector is positive and the inner contact is negative.

-- J W Dowell

CKT TS/2068 Voltage Reducer



C1 - 0.1mf Cer R1 - 270 ohm/2W
C2 - 100mf/10V Dz1 - 8.4V/.4W
C3 - 100mf/10V Dz2 - 9.1V/.4W
C4 - 0.1mf Cer Q1 - 2N3055 ETC

Beginning With Quill Word Processing

For a newcomer to word processing, Quill may seem rather complicated and confusing. However, with practice, it will be as natural as a pencil and paper to use. I am by no means an expert myself in its use but sharing what I have learned with other new QL users will help you get over that initial shock.

The first thing to know about Quill is that you have very little room in memory for your documents: only about 1100 words can be written before a "Memory Full" will appear. Adding more memory through some of the aftermarket devices will greatly increase your document size. Meanwhile, when you do get the "Memory Full" message, immediately save the document to microdrive, perhaps with the a name like "letter1" and then create the rest of your document as "letter2", "letter3", etc.

In the lower left hand corner of your screen is the MODE you are in. You can type faster in INSERT mode, so only use OVERWRITE when you actually need it then go back to INSERT. By the way, you switch between the two by holding down either shift key and pressing F4.

After using Quill for a few days you will notice how long it takes to call up a command using F3 and waiting for the upper window of the screen to display the list of available commands. Once you've learned the basic commands, turn off that upper window by pressing F2. Now watch the MODE prompt in the lower left of your screen. It will always tell you which command you are accessing and you will be able to move much more quickly in your work without the wait associated with updating the upper window of your screen. Turning off the prompts with F2 also gives you about four extra lines of text on screen at once.

Are you using a monochrome screen? Use F3 and DISPLAY to change your type color from green to white. Quill assumes when it first comes on that you are using an RGB monitor and does text in green, which is not as clear on a monochrome screen as white.

Quill automatically indents the first line of each new paragraph. Earlier versions of Quill could not be changed, but the 2.1 version being shipped with American QLS allows this to be modified using F3 and the MARGIN command. I always set my "left margin" and "indent" to the same

position then use the space bar to indent.

Do you want to turn off the page numbering at the bottom of each page? Use F3 and FOOTER. Select "None" to turn it off.

Do you have certain formats--that is, headings, column widths, indents, etc. that you use over and over. Then set up your screen just as you would want to have it but without typing in any of your text. Now save this "blank" file to microdrive. All the parameters you set will be saved. Each time you wish to use that format, load that empty file back to the screen and begin to work. When the text is all entered, save it under a different file name. The empty file will still be on your microdrive ready to be used next time.

Did you know that Quill has "hidden hyphenation"? Hidden hyphenation allows the marking of places in words where a hyphen may be used if Quill needs to divide the word at that place to end the line and go to the next. If it uses it, a hyphen is inserted in the text; if not, no hyphen is displayed on the screen. This is most helpful when a text may later be edited or reformatted so that hyphens will no longer appear in the same places. To place a hidden hyphen in the text, place the cursor where the hyphen should appear, press F3 twice (to get to second command screen) and press "H" twice then enter. This puts a hidden hyphen at that point ready to be used when Quill needs it. Practice with this for a while and you will wonder how you could ever get along without it.

Getting tired of moving back and forth through your text using the cursor keys and moving one line at a time? Holding down SHIFT while pressing the up or down arrow will move you one paragraph at a time. To go to the beginning or end of a document, press F3 then GOTO; "B" will go to the bottom of your file, "T" to the top of your file.

Finally, a word about customizing Quill for your printer. When F3 and PRINT are selected, Quill always briefly accesses the microdrive to load its customized printer routine. To customize the printer routine just for your printer, see the "Information" section of your manual. The procedure is basically as follows. While in SuperBASIC, not in Quill, place the Quill program cartridge in microdrive 1 and type "LRUN MDV1_PRINTER_BAS" to load

and run the printer installation program. Wait until mdv1 turns off (it will stop and start several times). The program will ask if you are using a serial or parallel interface. Then a menu of different printers will be displayed. Yours will probably not be among them unless you have an Epson or Smith Corona. However, your printer may emulate one of those listed. If so, choose the appropriate printer. If not, choose "Other" and press the F2 key to set up a file with the parameters of your printer. Consult your printer manual and modify the various "Default codes" displayed. Read the manual carefully at this point. To use features of your printer not listed, use

the "Translate" codes. This will allow codes like italics on and off and elite on and off to be "hidden" under seldom used characters on the keyboard. When all parameters have been entered, press F5 to save this new printer setup and install it with Quill. If all was done right, Quill will now boot up with your printer automatically configured for.

This should be enough to get you going and enjoying the power of Quill. Future articles will give more hints and tips. Any reader learning other useful ways of accomplishing work with Quill can send in their techniques to SUM. -- Richard Cravy

Key Modifications for 2068 Users

Recently SUM ran an article on English keyboards available for Spectrum and 2068 users. At that time detailed instructions were not included on how to adapt the keyboard cable connectors to work with the T/S 2068. This article should help with that deficiency.

When installing the T/S 2068 in the various English keyboards that are available, three main areas are a problem:

1. Finding a way to conveniently mount the 2068 motherboard in the keyboard case, since 2068 mounting holes are different from Spectrum.
2. Modifying the case so that access to all necessary 2068 inputs and output connections is possible.
3. Finding a way to connect the cables from the new keyboard to the 2068 motherboard.

There is no one way to solve the above problems. Each model of keyboard is different. Those keyboards with plastic cases can most easily be modified for #1 and #2. So we will concentrate on #3.

The 2068 keyboard is connected to its motherboard by a single ribbon cable of 13 conductors (lines) plugging into a single 13 connection socket.

Meanwhile, the Spectrum and Spectrum Plus connect to their motherboards with two cables, one of 8 and one of 5 lines, running to two separate sockets located at different places on the motherboard. An additional difference with the 2068 is that the 5 connector ribbon and socket have their connections on the other side of the ribbon as compared to the same 5 lines on the 2068. This makes it impossible to plug either the Spectrum

Plus or other English keyboards into the single 2068 socket simply by laying the 8 and 5 lines cables side by side and plugging in. So we need to find a way to get the contacts on the other side of the 5 line ribbon cable.

1. If it is only a ribbon cable (no small circuit board or stiff plexiglass on its end) and the cable is flexible enough, bend the end into a U shape with the traces to the outside. Be very carefully not to break the conducting traces. Do not bend more than once as bending back and forth will break them. Now insert the cable in the 2068 socket along side the 8 line cable ($8 + 5 = 13!$).

2. Some keyboard cables have small circuit boards soldered to the end that plugs into the motherboard connector. The one on the five line cable can be unsoldered, turned over and re-soldered to the ribbon cable. It can now be plugged into the 2068 motherboard (though you may need to trim the edges of the boards to make them fit in side by side).

3. Some English keyboards give access to the 5 line cable where it attaches to the English keyboard. If so, it may can be turned over and re-connected there (often by means of a clip). Thus turning the cable over makes everything right at the motherboard end.

(4) One last problem is having cables that are too short for one or both to reach the 2068 connector. The reader will have to be left to his own solutions on this one. Installing a longer pair of cables would be the easiest IF a source for the ribbon cable material.

-- Richard Cravy

Solving Jumbled Word Puzzles

A very popular syndicated newspaper feature is JUMBLE, a word puzzle involving four jumbled words which need to be unjumbled, then a master word made up of letters from the first four. My problem with this puzzle was one of frustration; I usually gave up before I finally was able to unjumble all the words. Now Ken Duda has done me, and all our readers who enjoy this puzzle a favor by writing a program that will keep reshuffling the letters in a word for you until you can identify a real word. Also included is a recent copy of the puzzle for you to practice with. Type in the the letters for a word once, then just press any key, and the computer keeps switching the letters around until you figure the word out. To enter in a new word, hit Cap/Shift & BREAK, then RUN the program again.

```

10 POKE 23658,8: REM CAPS LOCK
20 BORDER 0: PAPER 0: INK 7: CLS
30 PRINT AT 10,2;"HOW MANY LETTERS? (5 OR
  6)"
40 INPUT A
50 IF A=6 THEN GO TO 250
60 CLS
70 PRINT AT 2,9; INK 2;"S H U F F L E"
80 GO SUB 430
90 PRINT AT 20,3; INK 1;"PRESS ANY KEY TO
  CONTINUE"
100 INPUT B$
110 GO SUB 200
120 LET C$=""
130 FOR I=1 TO 5

```

```

140 LET R= INT (5* RND )+1
150 IF B$(R)="0" THEN GO TO 140
160 LET C$=C$+B$(R)+" "
170 LET B$(R)="0"
180 NEXT I
190 PRINT AT 10,11; INK 6;C$: GO TO 220
200 LET Z$=B$
210 RETURN
220 LET B$=Z$
230 PAUSE 0
240 GO TO 110
250 CLS: PRINT AT 2,9; INK 2;"S H U F F L
  E"
260 GO SUB 430
270 PRINT AT 20,3; INK 1;"PRESS ANY KEY TO
  CONTINUE"
280 INPUT B$
290 GO SUB 380
300 LET C$=""
310 FOR I=1 TO 6
320 LET R= INT (6* RND)+1
330 IF B$(R)="0" THEN GO TO 320
340 LET C$=C$+B$(R)+" "
350 LET B$(R)="0"
360 NEXT I
370 PRINT AT 10,10; INK 6;C$: GO SUB 430:
  GO TO 400
380 LET Z$=B$
390 RETURN
400 LET B$=Z$
410 PAUSE 0
420 GO TO 290
430 INK 7: PLOT 72,103: DRAW 103,0: DRAW
  0,-25: DRAW -103,0: DRAW 0,25
440 RETURN
450 SAVE "SHUFFLE" LINE 10

```

JUMBLE

By Henri Arnold & Bob Lee

Unscramble these four Jumbles: one letter to each square, to form four ordinary words.

HOCEK

LURTY

CALAPE

RERROT



Now arrange the jumbled letters to form the surprise answer, as suggested by the cartoon to the left.

Answer:

Answer tomorrow

Yesterday's Jumbles: FRIAR
TESTY ENTIRE HELMET
Answer: Sometimes a police dog is
the only law with this—TEETH IN
IT

Using the "Tomy Tutor" Recorder with TS-2068

While looking in a Video Concepts store the other day, I came across some old computer accessories they were selling off and found some "Tomy Tutor" data recorders they were dumping at \$3 each. The recorders come with a power supply and have a tape counter and speaker to monitor what you SAVE or LOAD. Figuring I could not go wrong, I bought two and took them home to try out.

Much to my disappointment, they did not have enough volume to LOAD a tape. There are no controls to fiddle with, so I went inside to see what could be done to improve the gain of the circuitry.

After many trials and errors, I finally discovered what did what and determined the changes that were necessary to make it work. The easiest way to make the changes was to piggy-back some extra resistors. Carefully remove the bottom cover and two screws holding printed circuit board (and shield) in place. Gently pull away the circuit board and put into position as in photo so you can see the components.

From the photo, follow the arrows to first a resistor marked red-black-red-gold (2000 ohms) and piggy-back a 390 ohm resistor (orange-white-brown-gold or silver). Second, find the resistor marked brown-red-orange-gold (12000 ohms) and piggy-back a 1000 ohm resistor (brown-black-red-gold or silver). Third, find the resistor marked grey-red-red-gold (8200 ohms) and piggy-back a 680 ohm resistor (blue-grey-brown-gold or silver).

Not visible in the photo is a resistor just behind the connector marked "IN" labeled yellow-violet-yellow-gold (470,000 ohms). Piggy-back a 100,000 ohm resistor

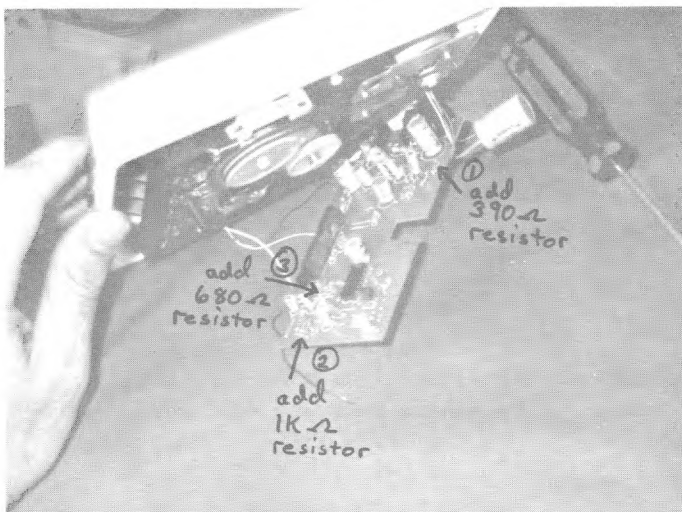
to this one (brown-black-yellow-gold or silver). Also, there is a resistor right next to that last one marked red-red-brown (220 ohms). Short this one out with a piece of wire. These last two modifications may not be needed on some computers. Be careful while soldering these connections so as to not cause loose solder connections on the bottom or solder bridges to adjacent traces.

Once you have made these connections and made sure that everything is right, re-assemble for test time. Connect the "mic" plug to the jack marked "IN" and the "ear" plug to the jack marked "out". LOAD your favorite tape to try it out. You should be able to hear the data as it loads. One thing you may notice as it loads is that the pitch is higher. This is because the tape speed is faster than a normal cassette recorder. That means that your pre-recorded programs will load faster!

Since using this recorder, I have had no problems saving and loading tapes -- no controls to worry about. It seems to be more reliable than my old die-hard Panasonic recorder. It is impractical to use this with the TS 1000 or 1500 due to the difference in motor speed (they won't lock on to the different data speed like the 2068 (and Spectrum) does.

To find them in your area, check any stores which carried the computer. It was geared more towards young children, so check with toy stores and also with pawn shops. Be sure and not mix-up the power cables - they are the same type.

-- Joe Williamson



Vendor Reports

TS COMPUTERFEST

A midwest Timex/Sinclair Computerfest is being planned for May. Most software, hardware, magazines and other supporters will be on hand to answer your questions and help you make better use of your computer and to help rekindle interest in the family of T/S users--particularly those who have their machines hidden on the top shelf of their closet.

For more information, write to:

T/S Midwest Computerfest
3832 Watterson Ave
Cincinnati, OH 45227

or:

Frank Davis
513 East Main Str
Peru, In 46970

COMPATIBLE DRIVES

Mrs. Ana Meleiro of TIMEX Portugal wrote in response to our July article "An Update On Using the Portuguese Disk Drive System" by saying that you can use 3 1/2" or 5 1/4" drives in your system as drive B, C, or D as long as the step rate is 6 ms. And that FORMATING would be done in the normal way as with the 3".

Beware though because Zebra has stated that they will not honor the warranty on any systems which do not use only the supplied drives.

NEW BOOK

IM-PRESS 1412 Rosewood, Ann Arbor, MI 48104 (313) 761-2231 has just announced a new book entitled "1-HOUR TELECOMPUTING" which was written to help you better understand the telecomputing process and get the most out of your system. \$19.95

WORKIN' IN THE "SOFTWARE PATCH"

By Bill Ferrebee

The object of this (hopefully!) continuing column is to provide you with some easy-to-do modifications to software you may already own for your 2068.

A "patch" is an addition of modification to the source code of a computer program. Making these changes should either enable your program to perform a new task, or improve upon a feature already available.

Since most of us (including me) are not fluent in programming in machine code, I

will attempt to make any modifications to M/C as simple as possible. This means you will probably only need to POKE some numbers into specific memory locations.

While making changes in BASIC are much easier, breaking into the listing of a program can possibly (not always, though) be a trick. Depending upon the design of the particular program, it could be as easy as pressing the BREAK key. Some programs even give you a menu option to escape to BASIC as Tasword does. Some programmers want to make it difficult to break into "their" program. You can usually foil their efforts by using MERGE "" instead of LOAD "" to load the program into the computer.

Many of the patches I will share with you were given to me by good friends from throughout the country. Others came from various user group newsletters and a few from myself. I will acknowledge the proper sources when I share their modifications with you. If you have any patches you would like to share with everyone send them to:

Bill Ferrebee
749 Hill Street #6
Parkersburg, WV 26104

The first patches I would like to share with you are for the TASWORD TWO word processor program by Tasman.

First, most of you probably know of the five POKES that allow you to use an AERCO Centronics interface with TASWORD. Simply LOAD the program and enter BASIC through the main menu. Then:

POKE 57999,127
POKE 58001,103
POKE 58008,127
POKE 58014,219
POKE 58015,127

The other modification for TASWORD is a collaboration of William Erickson of Decatur, GA and myself.

If you own a full-size printer and a TS2040 printer, you may or may not know of this problem. If you print out a text file with your full-size printer and then want to use your 2040 to print, it can't be done.

To remedy this, enter BASIC through the main menu as above and add or modify the following program lines:

Vendor Reports

COLOR BLIND TO COLORFUL

29 POKE 26703,0: POKE 26704,5
290 RANDOMIZE USR VAL "59806":
POKE 26703,0: POKE 26704,5: GO
TO VAL "10"

Then GO TO 25 and SAVE this version of the program.

I thank Bill for his input into this "patch". You can reach him at:

William Erickson
1445 Oldfield Rd
Decatur, GA 30030

Next time I will share modifications for OMNICALC 2 that will enable you to use a full-size printer to output your spreadsheets. Until then...Keep computin'!

-- Bill Ferrebee

According to recent reports, HARRY TOWNER has several brand new 2068s as well as a few cassettes and cartridges of Timex software available at very reasonable prices. Harry Towner, 3022 N. Josey Lane #135, Carrollton, TX 75007; phone 214/394-1156.

TIMEX TECHNICAL MANUAL

It is our understanding that TIME DESIGNS, one of our fellow publications, has secured the rights to reproduce the original TIMEX TECHNICAL MANUAL for the T/S 2068. Tim Woods, editor, says that this is a corrected edition with some extra appendices which will be available about February 15 at \$25 per copy postpaid.

Also available from TIME DESIGNS are two books printed by diLithium Press: "THE SINCLAIR ZX-81: PROGRAMMING FOR REAL APPLICATIONS" (includes software tape) for \$6; and "CONTROL THINGS WITH YOUR TIMEX SINCLAIR" for \$5. Both prices are postpaid. Both books together can be purchased for \$10. Time Designs, 29722 Hult Road, Colton, OR 97017.

I have had four color blind TS 2068's. The first one I sent to Timex Little Rock Repair Center and was sent another 2068. I electrocuted that 2068 and sent it to TS Connections in Cincinnati. It was returned to me with a memo to give it a decent burial. I ordered a second-hand 2068 from them and it was also color blind.

Bob Dyl said to send the dead one to Timex Repair Center with a check for \$35. In two weeks I received a 2068 and a check for \$5.05. It was also color blind. In the mean time, I was using my daughter's 2068. Thats right, it too was color blind.

A couple of months ago, Joe Williamson told me to adjust c 18 in the RF can inside the computer. I'm a stroke victim and my coordination leaves a lot to be desired.

I got out the schematic and removed the seven screws from the bottom of the computer. Watch that the three rear screws are longer than the other four. Turn the 2068 right side up. carefully tilt the top back. The ribbon cable restricts you, but you can reach the rf can in the upper left corner. Slip a small screwdriver in c 18.

Turn your 2068 on and LOAD a colorful program. Tilt the top of your 2068 so you can insert a small screwdriver in c 18, turn the adjustment a couple of degrees in both directions until you see color.

If that didn't work, look for the speaker. VR1 and VR2 are above and to the left and VR3 is to the left and toward the switch. You can adjust these a degree or two. VR2 adjusts the blue vector and VR3 adjusts the red vector. Then adjust VR1 which adjusts the sync and white level which helps to keep the display steady and give good contrast.

It took me about an hour to do the first one, a half hour for the second and not more than 15 minutes on the third. I'm handicapped. You should have no problem.

-- Bill Woodward

ZX 81 with EZ KBD, Votem, 32K, ZX 81 Printer, Modem (BB) Chan. 33, Zebra Joystick, New TS 1000, Manuals, Mags, & Articles, 30 PCS. Software, Power Packs etc. Also have Bearcat Scanner 250 - Make offer. \$250 on ZX 81 etc. or offer. Donald R. Flood, 281 Pelican Dr., Oldsmar, FL. 33557. (813) 784-7072. Will deliver if within 50 miles.

Hex Versus Decimal

One thing for sure, I am new to computing and computers are new to me.

My first computer was the ZX-80. Next came the ZX-81 followed by a TS-1000 and now the TS-2068. Neither myself or any of my computers understand hexadecimal (hex). My computer refuses to use anything but decimal. Realizing it is not intelligent, I figured for the last five years there must be something wrong with all of my computers. They must be inferior not recognizing hex!

All humans associated with computers converse in hex language. Why not my computers? After all, this is what all the programs written in hex are for!

Now I understand in the beginning, BC (before computing) why hex was easier to work with, when computing was done by switches and later by a limited sixteen key pad, but now we have full typewriter keyboards and do not have to use obsolete methods to program.

Finally I realized the reason my computer did not recognize hex, is because it did not need to. It is smart enough to convert decimal to binary. It didn't have to take simple decimal and convert to an un-understandable language, called hex to finally convert to its own language. It is smart enough to leave out the middle man and go direct.

Yes, hex is obsolete. -NO!!- How about Latin? The reason we don't use Latin is because it is too limited and no longer fills today's requirements. Neither does hex.

The new, smarter generation will dispense with hex. After all, hex only goes to 16! We now have 32 bit microprocessors and need a base 32. Pretty soon it will be 64, then what!? Give me good old decimal. That way I don't have to learn a language most of today's computers don't understand.

Here is a good example. Jeff Mazur wrote the Intermediate/Advanced Guide for the 2068. Throughout the book he used both decimal and hex. Sometimes separately and sometimes together. The computer he wrote

about understands only decimal. As a result, neither the computer or I could use a lot of the information presented.

Now me, being a little smarter than the computer, went through the book and with the help of my handy-dandy calculator, converted all the hex to decimal and wrote in what the author left out. Now by gosh I can understand what he was talking about. You see Jeff, in spite of your attempts to confuse me, I out-smarted you. Now the computer understands.

When I tried to tell my 2068 to OUT 7F, it balked. It just wouldn't do a thing. The 7F should be presented as 7Fh. The h denoting hex. OUT 127 it understood perfectly.

Now here is a good one to demonstrate just how far the hex nut will go. I read an article that took easily understandable decimal and converted it to un-understandable hex, then created a BASIC program to convert the hex to decimal so the 2068 could understand it!! I read that one twice to see if I missed something.

There you have it. After five years I finally realize what my dumb computers knew all the time. Neither one of us can use hex. Viva la decimal.

Thornton E. Benson
Benson, AZ

CLASSIFIED

ORIGINAL SOFTWARE for TS2068, 1000, & 1500. MONEY MANAGER, FILE MANAGER, FAMILY TREE, and many others for personal or business use. SASE for list. Alan Pattison, 3422 French Loop NW, Olympia, WA 98502.

2068 PRO/FILE OWNERS: The first two issues of EXTENSIONS total over a dozen improvements and corrections including data save and automatic file updating. \$6 each. Robert Fischer, 221 Scoggins Street, Summerville, GA 30747.

Wanted, a good used TS 2068 or Spectrum. Please contact Frank Davis, 513 East Main Str., Peru, IN 46970, (317) 473-4885



English Micro Connection

"Bridging the Atlantic to Bring You the Best in English Hardware and Software"

First Anniversary Customer Appreciation Sale We are having a birthday and you get the gifts!

We are a year old thanks to our customers and friends who have made **English Micro Connection** successful. We have decided to give you the birthday gift. We are taking our strongest sellers and offering them to you at unheard of prices.

Gremlins — was 13.95 now 7.95
Brian Bloodeaxe — was 12.95 now 7.95
Glass — was 11.95 now 6.95
Go To Hell — was 10.50 now 8.50
Starion — was 11.95 now 5.95
Softaid — was 6.95 now 5.95
Spy Hunter — was 12.95 now 7.95
Super Pipeline II — was 11.95 now 6.95
Backpacker's Guide to the Universe — was 12.95 now 7.95
Cauldron — was 12.95 now 7.95
Archon — was 12.95 now 7.95

BONUS! The latest smash hit from England
Rambo — was 13.95 now 10.00

Special!!

HiSoft's C Compiler for the Spectrum,
was 34.50 now 21.95

HARDWARE SPECIAL!

Mura 300 baud modem, sells nationally for 59.95, now 39.00!
Ideal for those with Portuguese Disk Drive system with RS-232 port and software.

Hurry while supplies last as we have made special arrangements with our distributors to make this sale possible.

SALE ENDS FEBRUARY 19!

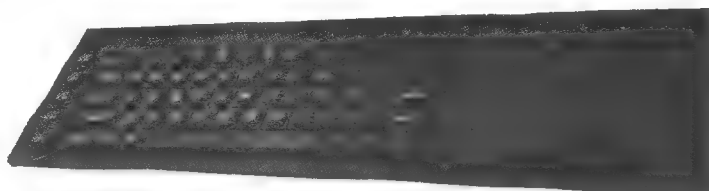
English Micro Connection • 15 Kilburn Court • Newport, RI 02840
401/849-3805

SINCLAIR QL- \$269

Super Sale of a Super Computer!

32 bit micro, 128K RAM, expandable to 640K, 40K ROM, 2 built-in microdrives, multi-tasking, windows, 2 RS232 ports, super graphics, complete with 4 super software titles- word processor, database, spreadsheet, and business graphics! Not cheap stuff! But this sale price won't last, orders must be in before Feb. 31! Only \$269 + \$10 shipping. (Extra wafers- 4 for 8.99)

QL



\$269

Big Printer Package Deal- \$199 !

AERCO centronics interface, driver software, MSCRIPT wordprocessor (#1 for 2068!), and a Gorilla/Banana printer with warantee, all for only \$199 +\$12 shipping...must order now! The won't last!

MSJ Microdrives \$139

Much faster than tape, much cheaper than disk!
Load 28K in 24 seconds! Comes complete with: 1
drive, interface, manual, 5 wafers, built in
printer interface (Centronics- cable \$21.99).
All for only \$139 +\$6.50 shipping.

LOWEST PRICES IN AMERICA!!

ROGUE TECH - \$39.99!

Computer doubler, plug inside 2068, add switch, flip switch...use 2068 as a Spectrum to run 1000's of British titles! On sale till Feb. 31 for only \$39.99 +\$5 shipping.

SEND NAME/ADDRESS, CHECK or MONEY ORDER with
order to:

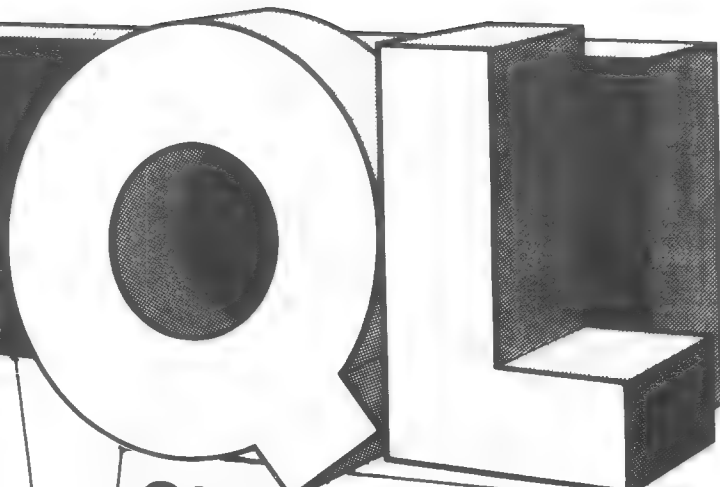
VARIETY SALES

DEPT. SM-2

175 Osborn Ave., New Haven, CT 06511

For FREE catalog or info call 203-387-8512, ask for JOE.

RELEASE THE POWER OF THE



QL C \$129.95

A professional specification C Compiler for the QL1 Designed by **LATTICE®**.

QL C is a complete implementation of the Kernighan and Ritchie definition of C. QL C is endorsed by Sinclair Research; it is the most powerful and fully featured C compiler available for the QL.

- > Complete Kernighan and Ritchie implementation.
- > Proven **LATTICE®** design, compatible with **LATTICE®** compilers on IBM PC, etc.
- > True compiler producing native 68000 code.
- > Powerful data types such as pointers, arrays, structures, and unions.
- > Comprehensive library of UNIX, QDOS and utility functions.
- > Over 90 detailed error messages.
- > Separate compilation.
- > Macros, conditional compilation, and other pre-processors.
- > Linker to link program modules; will also link to other relocatable binary modules (assembler, etc).
- > Chosen by Sinclair Research as the C compiler for the QL.

QL PASCAL \$99.95

A full ISO standard Pascal compiler for the QL1 A fast, powerful compiler, endorsed by Sinclair Research, and ideal for commercial, educational and personal use.

- > True compiler producing native 68000 code.
- > Fast, single pass compilation without intermediate stages.
- > Complete implementation of ISO 7185 - the international standard for Pascal - making it ideal for commercial and educational use.
- > Direct addressing of the full QL address space.
- > Programs can be linked with assembler and BCPL modules.
- > Comprehensive error handling: over 150 different compiler errors and 30 runtime errors are recognised.
- > Any length variable names and full 32-bit integers.
- > Easy to use interfaces to QL windows, graphics, traps, screen handling, file operations, etc.
- > Will handle very large sets and arrays.
- > Chosen by Sinclair Research as the Pascal compiler for the QL.

ASSEMBLER \$49.95

The best selling macro assembler for the QL1. A professional quality assembler with many useful features for the serious programmer.

- > Standard Motorola 68000 mnemonics.
- > Macro expansions.
- > Over 160 explicit error messages.
- > Produces code which can be EXECed, and run as a concurrent job.
- > External references allow linkage to high level languages such as QL C.
- > Integral linker allows up to 20 assembler programs to be linked together.
- > Position independent, absolute or relocatable code can be produced.
- > Conditional assembly.
- > Large range of directives.
- > Fully formatted listings.
- > 30 character variable names and 32-bit values.

BCPL \$79.95

BCPL is a popular and elegant systems programming language ideal for writing games, utilities, and applications programs. It combines the convenience of high level language with the flexibility of an assembler.

- > True compiler with separate compilation
- > Includes all the standard BCPL functions
- > Full runtime library includes interfaces to QDOS graphics, file operations, window handling, etc
- > Exception handling provides diagnostics for debugging.
- > Link loader allows linkage of separately compiled segments
- > BCPL modules can be linked with Assembler and Pascal modules.
- > 32-bit variables use the full QL address space.

LISP \$79.95

LISP is one of the key programming languages of the '80s, widely used for research into expert systems and artificial intelligence.

- > Full support of QL features including window graphics, and screen handling.
- > Compatible with Acornsoft Lisp for the BBC micro, but with many extra features.
- > Interpreter.
- > Turtle graphics make it easy to control the QL's graphics.
- > Structure editor allows alteration of data structures.
- > Prettyprinter displays programs in structural format.
- > Tracer to aid in debugging.
- > Garbage collection automatically recovers spare memory space.
- > 28-bit integers and 250-character names.

Every DEVELOPMENT KIT Includes Metacomco's popular screen editor, and a detailed manual. all KITS will operate either on a standard QL or else using QL peripherals such as floppy disks or memory expansion.

Available from Curry Computer, Zebra Computer, English Micro Connection, and many QL dealers or direct from Metacomco. Dealer inquiries welcome.

METACOMCO

5353 #E Scotts Valley Drive
Scotts Valley, CA 95066
Tel: CA 800-GET-META, US 800-AKA-META

Phone today or mail this coupon to:

Tenchstar, 5353 #E Scotts Valley Drive, Scotts Valley, CA 95066


Please send me: ☐ QL C \$129.95 ☐ QL PASCAL \$99.95 ☐ ASSEMBLER \$49.95 ☐ BCPL \$79.95 ☐ LISP \$79.95 ☐ More Information ☐ Check enclosed for \$_____

NAME _____

ADDRESS _____


ZIP _____ TEL. NO. _____

Price includes postage and packing on the mainland only Delivery allow up to 28 days



The monthly magazine with a natural blending of two popular hobbies — Ham Radio and Computers

U.S.A.	\$15.00 for 13 issues
Mexico, Canada	\$25.00
Foreign	\$35.00(land) - \$55.00(air)
(U.S. funds only)	
Permanent (U.S. Subscription)	\$100.00
Sample Copy	\$3.50



Circulation Manager
1704 Sam Drive
Birmingham, Alabama 35235
Phone 205/854-0271

QuarTers

A quarterly publication for the Timex/Sinclair computer user.

"...Every issue has been full of helpful articles, great software reviews and new product information. Thanks for publishing a needed magazine for TS computer owners and for keeping it easy to read and understand. I have read other TS computer magazines, but none have been as helpful to me as QuarTers...I'm really glad I subscribed to QuarTers..."-C. Bower

One year subs. only \$8.00. Overseas only \$11.00(US\$). Check or MO to: WMJ DATA SYSTEMS, 4 Butterfly Dr, Hauppauge, NY 11788.

FREE FIRST ISSUE

SUM

Send this coupon to WMJ Data Systems, 4 Butterfly Drive, Hauppauge, NY 11788. You will receive one free issue of QIS and we will bill you for a one year subscription. If you do not want to subscribe write cancel on the bill and keep your free issue.

NAME

STREET

CITY

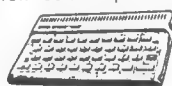
STATE

ZIP

T-S Horizons

Affordable Quality for the Timex Computer User

Each issue brings you 40 pages of usable information, program listings, product reviews, programming articles, hardware projects, and applications for your computer. T-S HORIZONS features nationally known authors like Paul Hunter, Gordon Young, and others. The price is ONLY \$15.00 for a full year (12 issues) AND for a limited time only, new subscribers will receive our special telecommunications issue (#7, see below) *FREE* with their subscription.



TIMEX **SINCLAIR**



T-S Horizons

August No. 7 \$1.25



TS-2068 PROGRAMS
REVIEWS
Reviews & Gossip
New Column

IN T-S HORIZONS #7

- * Byte Back Modem Review
- * 2068 Programming Tips
- * How a Compiler Works
- * Telecommunications for Beginner
- * Book & Game Reviews
- * Rotating Globe Routine

Articles By Gordon Young and Paul Hunter

* Sinclair Info. Net.

* TS-1000 Power Supply - and more!!!

Enclose \$15 (US) for 12-issue subscription, plus *FREE* back issue (while supplies last). \$21 Canada, \$25 other foreign. Extra back issue/sample \$2.00.

NAME

ADDRESS

CITY

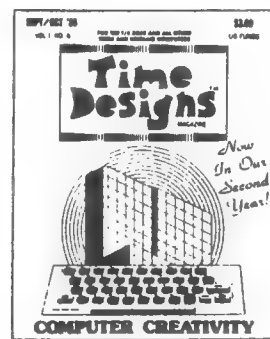
SEND TO:
T-S HORIZONS
2002 Summit Street
Portsmouth, Ohio 45662

STATE, ZIP

SUM * SATISFACTION GUARANTEED *

Timex / Sinclair Owners...

TAKE A LOOK!



TIME DESIGNS MAGAZINE

FOR YOUR
2068 - 1000/1500 - SPECTRUM

- * Readers nationwide (and Canada too!)
- * 36 Illustrated Pages
- * Published "On Time"
- * Interesting Articles / Programs
- * Current Information
- * Exclusive "T/S Shopper" Guide

SUBSCRIBE TODAY!

SAVE \$3.00 Off Newstand Price...Send Coupon (or a copy) with Check or Money Order for \$15 (U.S. Funds Only) to address posted below. We will start your subscription right away upon receipt of your order.

TIME DESIGNS MAGAZINE COMPANY
29722 Hull Rd. - Cotton, Oregon 97017

Name

Address

City / State

Zip

WOW! AT LAST!! A VERY AFFORDABLE COMPUTER
AT A VERY AFFORDABLE PRICE

POWERFUL FULLY PROGRAMMABLE WITH 2K OF MEMORY—PORTABLE—5 7/8" x 1-3/8" INCH MODULE SINGLE-KEY ENTRY COMMANDS—DURABLE 40 KEY MEMBRANE TYPE KEYBOARD—Z80A BASED FOUR CHIP DESIGN—EDUCATIONAL—UNIQUE SYNTAX-CHECK REPORT CODES FOR ERROR IDENTITY—GRAPH DRAWING AND ANIMATED DISPLAY—ACCURATE TO 9-1/2 DECIMAL PLACES FOR FULL RANGE MATH AND SCIENTIFIC FUNCTIONS—AT AN AFFORDABLE PRICE

WE CANNOT TELL YOU THE MAKE OF THE COMPUTER BUT IT WAS MADE BY A FAMOUS WATCH COMPANY. THEY USED TO SELL FOR \$99.95.

WE BOUGHT OUT WHAT THE FACTORY HAD LEFT IN STOCK AND HAD TO REMOVE THE LABELS. THESE UNITS ARE UNPACKAGED. LESS THE 9V WALL ADAPTER AND MANUAL. BECAUSE THIS IS A DISCONTINUED ITEM THERE IS NO WARRANTY.

GET THEM WHILE THEY LAST

LIMITED SUPPLY

BUY 1st UNIT FOR \$19.95 BUY 2nd FOR \$16.95 9V DC WALL ADAPTOR \$4.95
BUY THE 3rd UNIT (NON OPERATING FOR PARTS) \$10.95 MANUAL (OVER 150 PAGES) \$2.95

See September 1984 issue of 73 for TIMEX/TTY article

CHIP BONANZA (AT THESE PRICES THEY ARE A STEAL)

2708	.....	\$1.00 EA OR 10 FOR \$ 9.00
2716	.....	\$2.25 EA OR 10 FOR \$20.00
2732	.....	\$3.25 EA OR 10 FOR \$30.00
2764	.....	\$4.00 EA OR 10 FOR \$35.00
27136	.....	\$7.00 EA OR 10 FOR \$60.00
8002	.....	\$4.95 EA OR 10 FOR \$45.00
8010	.....	\$1.95 EA OR 10 FOR \$18.00
80A00	.....	\$5.95 EA OR 10 FOR \$50.00
80A21	.....	\$2.95 EA OR 10 FOR \$25.00
4116	.....	6 FOR \$ 5.98
4134	.....	6 FOR \$ 5.98
XR-2211	.....	(SPECIAL) \$ 2.95
TMS 9900NL MICRO-P 84 PIN 8 BIT DIB + 18 BIT CPU	.....	\$ 4.95
TMS 9901NL MICRO-P PSI	.....	\$ 2.95
TMS 9904NL MICRO-P CLOCK GEN. AND DRIVER	.....	\$ 5.95
TMS 9918ANL MICRO-P COLOR GRAPHICS AND DISPLAY	.....	\$ 8.95
KEYBOARD (88/4) 40 KEYS MEASURE 4 x 10 (H-TEN)	.....	\$ 9.95

HAL'S COMPUTER GOODIES

Times printer (reg. \$99.95) now \$59.95

Coleco cassette player (battery op.) \$29.95

9V. @ 600 Ma. adapter (needed for 18K RAM packs) \$7.95

16K RAM pack module, new \$29.95

16K RAM pack module, refurbished \$19.95

RCA TV interface cable \$1.25

Dual jack cassette interface \$2.50

TV/Computer game switch \$3.95

APPLE II and APPLE II+ COMPUTER MAINFRAMES fully populated \$150.

Power supply, case and keyboard, separately available Call or Write

Unit as described above, fully assembled & tested \$350 plus shipping

APPLE POWER SUPPLIES \$29.95

Cassette Software:

I have cassette software send for list (reg. \$9.95-\$14.95)

Hal's Special Price: 1 for \$3.95; 3 for \$10.95; 8 for \$19.50; 10 for \$29.50; 20 for \$50.00

or let Hal select 25 different cassettes (my choice) at 25 for \$50.00!!!

SHIPPING INFORMATION: ORDERS OVER \$25 WILL BE SHIPPED POST-PAID EXCEPT ON ITEMS WHERE ADDITIONAL CHARGES ARE REQUESTED ON ORDERS LESS THAN \$25. PLEASE INCLUDE ADDITIONAL \$2.50 FOR HANDLING AND MAILING CHARGES. MICHIGAN RESIDENTS ADD 4% SALES TAX. SEND 20¢ STAMP OR BARE FOR FREE FLYER. CANADIAN ORDERS ADD \$5.00 POSTAGE IN U.S. FUNDS.

HAL-TRONIX, INC.
P.O. BOX 1101 - DEPT. HR
SOUTHGATE, MICH. 48195
PHONE (313) 285-1782

"HAL" HAROLD C. NOWLAND
W8ZXH

SERIOUS PROGRAMMERS

Machine Language Utilities

- +Read/write cassette data files
- +Save/merge/erase BASIC
- +Save/restore variables
- +Overlay BASIC code
- +Copy auto-run tapes
- +Alphabetic sort

Machine Language Book

"Machine Language Programming on the Timex/Sinclair"
by D. B. Wood

How to use the ROM, pass parameters, read the keyboard, do animation, etc.

Word Processing

- +Full-feature editing
- +Save, load and append text
- +4K machine code; use up to 64K RAM
- +Versions available for normal or Qsave cassette; AERCO or COMPUSA disk
- +Versions with T2040 upper/lower case printer driver or with tailored driver for other interfaces/printers

COMPUSA Disk Utilities

- +Read/write to/from any memory address
- +Read/write multiple track data files
- +Read fractional tracks
- +Automatic disk-to-disk copy
- +Recover deleted tracks
- +List directory with physical tracks

==Quality products for the T/S 1000/1500 or ZX81==

Write for details - Dept SUM

SiriusWare

6 Turning Mill Road
Lexington, MA 02173

Smart Text TS-2068

and the new

Smart Text OS-64 (For the Zebra OS-64 Cartridge)

With Universal Intfc/Printer Patch
For all Configurations

Three Integrated softwares that does most all administrative functions
Word proc - Data files mgt - Mailing List - Form Letters - Mailing Labels
Repeat printing - Auto Letter Heads.

Supports all Printers, plus TS-2040.

29.95 + \$3.00 mailing to: Bill Jones
Gulf Micro, 1317 Stratford Ave,
Panama City, FL 32404

Don't Buy a Gorilla Banana!

For several years the "famous" Gorilla Banana dot matrix printer and its clones have been popular with Timex/Sinclair users. The reason was simple — **it was cheap!** Recent magazine ads have even been seen advertising models of this printer for under \$100. But the disadvantages of the Gorilla printer were many: it had poor letter quality using only 5 x 7 dots for forming characters; it provided no true true descenders on letters like y, p, and g; it could not handle single sheets of non-computer paper; it was not particularly compatible with available interfaces and software; and it only offered one basic typeface along with the double-width of that face.

Introducing the Brother Dot Matrix Printer! for only \$139.95*!



shown with optional tractor feed

ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDe fgh i 12345
ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDe fgh i 12345
ABCDe fgh 123 ABCDe fgh 123

actual print samples

The **Brother Dot Matrix Printer** is the best value on the market today! It operates on 110-120 volts, weighs but 6½ pounds, and is a very compact 3"x13"x7½" in size to save desk space. It prints at **50 characters per second** (about 35 seconds for a single double spaced page). It is **fully Epson compatible** and uses a **9 x 9** dot matrix pattern for true descenders. It prints on **any type paper** and has **friction feed**. It has **pica, elite, condensed, italics, double-width, sub and superscripts, bold, double-strike, underline**. **Full graphics capabilities** are built-in. It is fully compatible with Tasman, A & J, Rotronics, Aerco, and any other interface that supports Epson printers. It comes standard with **both parallel and serial interfaces** so that it will operate with the new Sinclair QL as well as all other Timex and Sinclair computers with appropriate interfaces.

***Price includes shipping (in U.S.A.) and all above listed features. Call about optional tractor feed. Florida residents must add 5% sales tax.**

**Foote Software — P.O. Box 14655 — Gainesville, FL 32604
904/462-1086**

ORDER BLANK

- ☐ I want to subscribe/extend (circle one) my subscription to *SUM Magazine* for one year. Enclosed is:
☐ \$15.00 (U.S. only) ☐ \$18.00 (Canada & Mexico — U.S. funds)

I want to order the following back issues:

- ☐ May '85 — **\$2.50**
☐ August '85 — **\$2.00**
☐ September '85 — **\$2.00**
☐ November '85 — **\$2.00**
☐ December '85 — **\$3.00**

- ☐ "Best of SUM" — \$9.95

Please do not order from earlier Order Forms as no other back issues are available.

NAME _____

Address _____

City/State/Zip _____

Expiration Date on label _____

Make all checks payable to "*SUM Magazine*". All prices are postage paid.
SUM MAGAZINE — 3224 NW 30 Avenue — Gainesville, Florida 32605



3224 Northwest 30th Avenue
Gainesville, Florida 32605

PLEASE EXPEDITE DELIVERY

99999
CCAT/S
1419 1/2
OREGON CITY, OR 97045

BULK RATE
U.S. POSTAGE
PAID
PERMIT NO. 460
Gainesville, FL